Remarks

I. 35 U.S.C. §102

Claims 1-8, 10-14, 16-27, 29-40 and 42 stand rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,345,302 to Bennett et al. ("Bennett").

Regarding claim 1, the Office Action states:

> As to claim 1, Bennett teaches the invention as claimed including: a system for communication by a local host that is connectable by a network to a remote host, the system comprising:
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> a communication processing device (CPD) [2000, Fig. 3, which is an Internet accelerator] that is integrated into the local host to connect the network and the local host, said CPD including hardware configured to analyze Internet Protocol (IP) and Transmission Control Protocol (TCP) headers of network packets [Abstract; col.15, lines 52-61; i.e., verify the TCP checksum, which is entered in field of header (see 322, Fig. 7)]; and
>
> a central processing unit (CPU) [10, Fig.3] running protocol processing instructions in the local host to create a TCP connection between the local host and the remote host [col.4, lines 44-50], said CPU providing to said CPD a media-access control (MAC) address, an IP address and a TCP port that correspond to said connection [e.g., col.16 lines 19-35; i.e., by default the CPD must obtain from CPU a copy of a media-access control (MAC) address (which is required for link and physical layers), an IP address (which is required for network layer) and a TCP port (which is required for transport layer) so as to independently process the acknowledgement packet and other activities within the network card (see also col.11, line 33 – col.12 line 20, wherein, e.g., MAC address is used in Ethernet environment],
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> wherein said CPD and said CPU are configured such that a message transferred between the network and the local host is generally processed by said CPD instead of said CPU when said CPD controls said connection and said message corresponds to said connection [col.4, lines 60-65; col.12, lines 21-37; col. 16, lines 4-35; col.21, lines 4-37; i.e., when a system uses network card 2000 (of Fig.3) to replace the related processing that is otherwise handled by TCP/IP software, the message related to TCP ACK is totally processed at the CPD].

A. Bennett is Nonenabled

To invalidate a claim for anticipation or obviousness, a prior art reference must be enabling. "That prior art patents may have described failed attempts or attempts that used different elements is not enough. The prior art must be enabling. See *Motorola, Inc. v. Interdigital Tech. Corp.*, 121 F.3d 1461, 1471, 43 USPQ 2d 1481, 1489 (Fed. Cir. 1997)

("In order to render a claimed apparatus or method obvious, the prior art must enable one skilled in the art to make and use the apparatus or method." (quoting *Beckman Instruments, Inc. v. LKB Produkter AB*, 892 F.2d 1547, 1551, 13 USPQ 2d 1301, 1304 (Fed. Cir. 1989)))." *Rockwell Int'l Corp. v. United States*, 147 F.3d 1358, 1365 (Fed. Cir.1998). See also *Fromson v. Advance Offset Plate, Inc.*, 755 F.2d 1549, 1558 (Fed. Cir. 1985), which states: "The 'failed' experiment reported in the prosecution history of the Mason patent renders that patent irrelevant as a prior art reference. As stated by Judge Learned Hand, 'another's experiment, imperfect and never perfected will not serve either as an anticipation or as part of the prior art, for it has not served to enrich it.' *Picard v. United Aircraft Corp.*, 128 F.2d 632, 635 (2d Cir. 1942), cert. denied, 317 U.S. 651, 87 L. Ed. 524, 63 S. Ct. 46, (1942)." See also *In re Kumar*, 418 F.3d 1361, 1368-1369 (Fed. Cir. 2005).

Bennett claims to automatically send an ACK for a datagram upon verifying the checksum for the datagram.[1] But the TCP protocol specifies that sending an ACK signals to the receiver of the ACK that all the data prior to that ACK number has been successfully received by the sender of the ACK. As noted in Stevens, "TCP/IP Illustrated, Volume 1, The Protocols," which was cited in Bennett and the present application, "the acknowledgement number in the TCP header means that the sender has successfully received up through but not including that byte. There is currently no way to acknowledge selected pieces of the data stream. For example, if bytes 1-1024 are received OK, and the next segment contains bytes 2049-3072, the receiver cannot acknowledge this new segment. All it can send is an ACK with 1025 as the acknowledgement number."[2] According to Bennett's preferred embodiment, however, the "NIC 2000" would automatically send an ACK with 3073 as the acknowledgement number for the example of Stevens, assuming that the checksum for bytes 2049-3072 was valid. This would indicate to the receiver of that ACK that all data up through byte 3072 was successfully received by the sender of the ACK, even though bytes 1025-2048 were never in fact received.

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[1] See, e.g., column 12, lines 7-11; column 16, lines 19-26.

[2] Richard Stevens, "TCP/IP Illustrated, Volume 1, The Protocols" (1994), page 226, lines 34-38. For the Examiner's convenience, a copy of page 226 of Stevens is enclosed.

Because Bennett makes no provision for resending lost packets, and the sender of data would believe that no prior packets need to be resent once the sender has received the ACK that would be automatically generated according to Bennett's disclosure, Bennett's preferred embodiment would cause the loss and corruption of data. In other words, Bennett's automatic sending of an ACK upon verifying the checksum for a datagram violates both the rules and the purpose of the TCP protocol.

The primary purpose of the TCP protocol is the guaranteed delivery of data. Bennett's foremost objective is also to "provide an improved method and apparatus for efficiently operating a reliable communication protocol in a computer network."[3] Yet the invention actually disclosed by Bennett would destroy the reliability and guaranteed delivery of data, thwarting the primary purposes of TCP and Bennett. For at least this reason, Bennett does not anticipate or render obvious any of the claims of the present application. Indeed, as will be discussed more fully regarding obviousness, Bennett instead demonstrates a long-standing need for the invention defined by the present claims, and a failure of others in their approach to solving that need.

B. <u>Bennett Does Not Disclose Several Limitations of Claim 1</u>

Applicants respectfully but strongly disagree with the Final Rejection allegation that Bennett teaches that "said CPD controls said connection." Neither the passages cited by the Office Action [col.4, lines 60-65; col.12, lines 21-37; col.16, lines 4-35; col.21, lines 4-37] nor any other portion of Bennett provides such a teaching or suggestion. Performing a checksum (adding) by "network card 2000" of Bennett is not controlling a connection. Bennett's alleged automatic generation of an ACK is not controlling a connection, but instead would likely destroy a TCP connection, as mentioned above. Moreover, some of the very portions cited by the Final Rejection demonstrate that the "network card 2000" of Bennett does not control the TCP connection. For example, column 16, lines 13-14 of Bennett states that one of the advantages of the preferred embodiment of that disclosure is that "only known valid datagrams are passed on to CPU 10." Because such datagrams include IP and TCP headers, this demonstrates that ongoing TCP processing for the connection (aside from the stateless checksum

processing and sending ACKs containing information from the CPU) is actually performed by Bennett's "CPU 10." Further evidence that Bennett does not teach that "network card 2000" controls a TCP connection can be found throughout that disclosure.[4] For at least this reason, the Final Rejection has not presented a *prima facie* case of anticipation of claim 1.

Instead of providing a *prima facie* case of anticipation, the Final Rejection responds to applicants' showing that the Office Action is deficient by stating cryptically in paragraph 23 that: "It is noted that both TCP logic 93 and protocol logic 45 are part of Bennett's network card 2000 (see Fig. 4)." This statement does not show, however, that "network card 2000" controls a TCP connection, for various reasons. First, neither FIG. 4 nor any other part of Bennett teaches that the "network card 2000" controls a TCP connection. In contrast, Bennett teaches that only a part of the TCP protocol is processed on the network card 2000.[5] Second, the relatively simple functions of "protocol logic 45" and "TCP logic 93," such as checksumming and ACK generation, do not even hint at controlling a TCP connection (although, as mentioned above, Bennett has taught how to destroy a TCP connection with erroneous ACK generation). Third, Bennett states that the fields that "protocol logic 45" saves are taken from the protocol logic state.[6] Note also that "TCP logic 93" is part of "protocol logic 45."[7] Therefore, the Final Rejection's note that "TCP logic 93 and protocol logic 45 are part of Bennett's network card 2000" is logically inconsistent with the Final Rejection's allegation that the "network card 2000" controls a TCP connection, unless one believes that Bennett states that "protocol logic 45" takes the fields from itself. Of course, given the fact that Bennett's preferred embodiment destroys the primary purpose of Bennett and that of TCP, outlandish interpretations of Bennett are possible, but are not likely to be true.

Applicants further respectfully disagree with the Final Rejection allegation that Bennett teaches "said CPU providing to said CPD a media-access control (MAC) address." The passages cited in the Final Rejection do not disclose this limitation. The

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[3] Summary of the Invention, column 1, line 65 – column 2, line 1.
[4] See, e.g., column 6, lines 39-44; column 14, lines 41-43.
[5] See, e.g., column 4, lines 60-65; column 5, lines 49-52; column 6, lines 39-47.
[6] Column 16, lines 27-30.
[7] Column 4, lines 60-62.

Final Rejection implicitly acknowledges that Bennett does not disclose this limitation, by alleging that this limitation must happen by default. As noted above, however, although Bennett has a primary objective of reliable data delivery, Bennett destroys that objective in its preferred embodiment by acknowledging data as having been successfully received when in fact it was not. Thus, there is no guarantee that Bennett does anything "by default." Moreover, applicants are unsure what is meant by the Final Rejection allegation of anticipation "by default." Computers do not operate "by default." Should the Final Rejection actually be alleging that this limitation is inherent in Bennett, applicants note that inherency requires that a missing limitation be naturally and necessarily present, which is clearly not applicable. For at least this additional reason, the Final Rejection has not presented a *prima facie* case of anticipation of claim 1.

Applicants further respectfully disagree with the Final Rejection allegation that Bennett teaches "a central processing unit (CPU) [10, Fig.3] running protocol processing instructions in the local host to create a TCP connection between the local host and the remote host [col.4, lines 44-50]." Much as above, this limitation also is not disclosed in the passages cited by the Final Rejection. Moreover, as discussed above, Bennett is either ignorant of the requirements of TCP or willing to destroy those requirements. Thus there is no guarantee that Bennett would know what a TCP connection is or how to create it, or if Bennett is knowledgeable of such matters, that Bennett would create a TCP connection because Bennett instead teaches how to destroy such a connection. For this reason also, the Final Rejection has not presented a *prima facie* case of anticipation of claim 1.

For at least the foregoing reasons, Bennett does not anticipate claim 1 or any of the claims that depend from claim 1.

C. <u>Bennett does not Anticipate any of Claims 17-27 and 29-40</u>

Regarding claims 17-27 and 29-40, including independent claims 17 and 30, the Office Action states:

> As to claims 17-27 and 29-40, since the features of these claims can also be found in claims 1, 4-6, 8, 10-14 and 16, they are rejected for the same reasons set forth in the rejection of claims 1, 4-6, 8, 10-14 and 16 above.

As noted in *Sandt Tech., Ltd. v. Resco Metal & Plastics Corp.*, 264 F.3d 1344, 1350 (Fed. Cir. 2001):

> Anticipation under § 102 requires "'the presence in a single prior art disclosure of all elements of a claimed invention ***arranged as in that claim***.'" *Carella v. Starlight Archery & Pro Line Co.*, 804 F.2d 135, 138, 231 U.S.P.Q. (BNA) 644, 646 (Fed. Cir. 1998) (quoting *Panduit Corp. v. Dennison Mfg. Co.*, 774 F.2d 1082, 1101, 227 U.S.P.Q. (BNA) 337, 350 (Fed. Cir. 1985)) (additional citations omitted).[8]

See also *Brown v. 3M*, 265 F.3d 1349, 1351 (Fed. Cir. 2001); *Karsten Mfg. Corp. v. Cleveland Golf Co.*, 242 F.3d 1376, 1383, 58 U.S.P.Q.2D (BNA) 1286, 1291 (Fed. Cir. 2001); *Scripps Clinic & Research Foundation v. Genentech, Inc.*, 927 F.2d 1565, 1576, 18 U.S.P.Q.2D (BNA) 1001, 1010 (Fed. Cir. 1991). *Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co.*, 221 USPQ 481, 485 (Fed. Cir. 1984).

The Final Rejection makes no effort to explicitly set forth how Bennett discloses the elements set forth in any of these claims, let alone any effort to allege that the elements are arranged as in that claim. For example, independent claim 30 includes the limitations "said CPD receiving control of said connection from said CPU, said CPD classifying a second network packet as corresponding to said connection and processing said second network packet without any protocol processing of said second network packet by said CPU." Applicants respectfully submit that none of these features can be found in claims 1, 4-6, 8, 10-14 and 16, and so the Final Rejection's reliance upon the rejection of claims 1, 4-6, 8, 10-14 and 16 is unsupported.

Moreover, as noted in *In re Zurko*, 258 F.3d 1379, 1386 (Fed. Cir. 2001):

> With respect to core factual findings in a determination of patentability, however, the Board cannot simply reach conclusions based on its own understanding or experience – or on its assessment of what would be basic knowledge or common sense. Rather, the Board must point to some concrete evidence in the record in support of these findings. To hold otherwise would render the process of appellate review for substantial evidence on the record a meaningless exercise.

See also *In re Lee*, 277 F.3d 1338, 1344 (Fed. Cir. 2002), which states:

[8] Emphasis added.

> It is well established that agencies have a duty to provide reviewing courts with a sufficient explanation for their decisions so that those decisions may be judged against the relevant statutory standards, and that failure to provide such an explanation is grounds for striking down the action.

Applicants respectfully assert that the Final Rejection has failed to present a *prima facie* case of anticipation of claims 17-27 and 29-40. Instead, the Final Rejection merely refers to other claims with different limitations than claims 17-27 and 29-40, giving no real indication of why claims 17-27 and 29-40 were rejected.

Because the Final Rejection refers to earlier claims to make its vague allegations, applicants refer the reader to the discussion above showing that Bennett is noneneabled. Moreover, applicants respectfully assert that claims 17-27 and 29-40 differ from Bennett in myriad ways. As mentioned above with regard to claim 1, applicants respectfully but strongly disagree with the Office Action allegation that Bennett teaches or suggests a CPD that controls a TCP connection. Neither the passages cited by the Office Action [Figs. 3 & 9; col.4, lines 60-65; col.21, lines 4-37] nor any other portion of Bennett provides such a teaching or suggestion. Applicants note that the Office Action also argues: "Note that the TCP acknowledgement packet is independently prepared by the CPD without CPU's involvement." Bennett's mechanism for this is described in column 16, lines 19-35, which state:

> Upon successful defragmentation of the datagram and validation of all applicable checksums, local node 1000 generates an acknowledgment (ACK) to be sent back to remote node 276. Referring back to FIG. 11B, TCP logic 93 includes acknowledgment (ACK) logic 115, allowing TCP processing in local node 1000 in the preferred embodiment to automatically generate an ACK segment (a TCP segment containing a set ACK flag in the TCP header). To accomplish this, protocol logic 45 saves the fields necessary to automatically generate the ACK datagram. These fields are taken from the protocol logic state and the incoming datagram headers. The saved data includes source IP address, datagram sequence identification number, source TCP port number, destination port number, and the available datagram memory (used for window size). These values are stored by TCP logic 93 in command list 42, which is resident in protocol logic 45.

Instead of teaching or suggesting a CPD that controls a transport layer connection, this passage makes clear that the fields used to generate an ACK "are taken from the

protocol logic state and the incoming datagram headers," showing that the protocol logic state is maintained and controlled elsewhere.

Applicants note that Bennett also does not disclose the limitation of claim 17 of "said CPU providing to said CPD a media-access control (MAC) address." The passages cited in the Final Rejection with regard to claim 1 do not disclose this limitation. The Final Rejection implicitly acknowledges that Bennett does not disclose this limitation, by alleging that this limitation must happen by default. As noted above, however, Bennett's preferred embodiment would destroy Bennett's primary purpose as well as that of TCP, and so there is no guarantee that Bennett does anything "by default." For at least this additional reason, the Final Rejection has not presented a *prima facie* case of anticipation of claim 17.

Applicants further note that Bennett also does not disclose the limitation of claim 17 of "a central processing unit (CPU) running protocol processing instructions in the local host to create a TCP connection between the local host and the remote host." Much as described above, this limitation also is not disclosed in the passages cited by the Final Rejection of claim1. Moreover, as discussed above, Bennett is either ignorant of the requirements of TCP or willing to destroy those requirements. Thus there is no guarantee that Bennett would know what a TCP connection is or how to create it, or if Bennett is knowledgeable of such matters, that Bennett would create a TCP connection because Bennett instead teaches how to destroy such a connection. For this reason also, the Final Rejection has not presented a *prima facie* case of anticipation of claim 17.

For at least the foregoing reasons, Bennett does not anticipate claim 17 or any of the claims that depend from claim 17.

The Office Action does not specifically address the different limitations found in independent claim 30. For example, claim 30 includes the limitation of "said CPD classifying a second network packet as corresponding to said connection and processing said second network packet without any processing of said second network packet by said CPU." This limitation is not taught or suggested in Bennett, and for that reason claim 30 is patentable over Bennett. Instead of providing a *prima facie* case of anticipation, the Final Rejection responds to applicants' showing that the Office Action is deficient by stating, in paragraph 23:

> (ii) It is submitted that all the limitations of claim 30 can be found in claims 1 or 17 because the phrase "classifying a second network packet that corresponds to the connection" only singles out a second network packet that corresponds to the connection (i.e., not all packets corresponding to the connection are classified as second network packets). The ACK packet cited from claim 1 or 17 is a second network packet that corresponds to the connection.

Applicants respectfully assert that this argument only serves to reinforce the fact that the Final Rejection does not present a *prima facie* case of anticipation of claim 30. Claims 1 and 17 do not recite "a second network packet," so the Final Rejection statement that "the ACK packet cited from claim 1 or 17 is a second network packet that corresponds to the connection" cannot be correct. Stated differently, claim 30 recites in part a first and a second network packet, and so the Final Rejection's reliance on claims 1 and 17, which each only recite a single packet, is at best misplaced.

Moreover, it is not at all clear what the Final Rejection is attempting to communicate with by statement "because the phrase 'classifying a second network packet that corresponds to the connection' only singles out a second network packet that corresponds to the connection (i.e., not all packets corresponding to the connection are classified as second network packets)." Applicants would appreciate the Examiner stating what features of Bennett are being used for the rejection of claim 30, so that applicants could respond to the Examiner. Without having presented the allegedly anticipatory features of Bennett so that applicants can respond, applicants respectfully assert that the Final Rejection has not presented a *prima facie* case of anticipation of claim 30.

In addition, the Final Rejection as best as can be understood appears to be confusing "classifying a second network packet as corresponding to said connection" with "creating an ACK." Applicants respectfully assert that Bennett does not teach "classifying an ACK as corresponding to said connection." For this reason as well, applicants respectfully assert that the Final Rejection has not presented a *prima facie* case of anticipation of claim 30.

Furthermore, by confusing "classifying" with "creating," the Final Rejection is ignoring the additional limitation of "processing said second network packet." For this

additional reason, applicants respectfully assert that the Final Rejection has not presented a *prima facie* case of anticipation of claim 30.

In short, the Final Rejection has fallen far short of stating how all elements of a claim 30 are found in Bennett, *arranged as in that claim.* For at least the forgoing reasons, the Final Rejection has not presented a *prima facie* case of anticipation of claim 30 or any claim that depends from claim 30.

Regarding claim 42, the Final Rejection states, in paragraph 18:

> As to claim 42, Bennett further teaches that said second network packet is received from the network by the local host [i.e., as described in the comments relating to the rejection of claim 1 or 17, in a similar manner a remote node may send an acknowledgement signal, which is received by the local CPD without involvement of the local CPU].

Applicants respectfully assert that Bennett does not teach the limitations of claim 42, as implicitly admitted by the Office Action's failure to point to such a limitation in Bennett, but to instead argue that this limitation may occur in a similar manner to allegations of the Office Action regarding claim1 or 17. Instead of providing a *prima facie* case of anticipation, the Final Rejection responds to applicants' showing that the Office Action is deficient by stating, in paragraph 23:

> As to claim 42, the office action simply states that an ACK packet (i.e., a second network packet) received by the local host is processed at Bennett's network card without passing up to the CPU.

Applicants respectfully assert, however, Bennett does not teach receiving an ACK packet by the local host. Bennett only teaches generating and sending an ACK packet by the local host. For at least this reason, applicants respectfully assert that the Final Rejection has not presented a *prima facie* case of anticipation of claim 42.

Moreover, because this "ACK packet (i.e., a second network packet)" is the same as that used by the Examiner to reject claim 30, from which claim 42 depends, the Examiner's statement regarding claim 42 provides further proof that claim 30 is not anticipated by Bennett. In other words, because the Final Rejection of claim 30 merely refers to other claims for limitations including "a second network packet," so this Final Rejection statement that the second network packet is a received ACK packet (which is not taught in Bennett), shows that the Final Rejection of claim 30 is even more flawed.

II. <u>35 U.S.C. §103</u>

Claims 28 and 41 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Bennett in view of U.S. Patent No. 6,173,333 to Jolitz et al. ("Jolitz"). Regarding claim 28, the Office Action states:

> As to claim 28, Bennett does not specifically teach using an ownership bit disposed in the local host to designate whether said CPU or said CPD controls said connection.
>
> However, in the same field of endeavor, Jolitz teaches a bypass mechanism for incoming/outgoing TCP/IP packets to bypass a TCP/IP accelerator under various conditions such as [e.g., col.5, lines 44-53; col.6, lines 1-8].
>
> It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement a bypass route for Bennett's network processor for non-TCP/IP packets (or when the network processor is unavailable) because Bennett's network processor is dedicated for portions of TCP/IP processing and the bypass route would facilitate the CPU's take over of the entire TCP/IP processing. <u>Note that a bypass route is typically implemented by controlling a switching circuit with a control signal (i.e., an ownership bit).</u>[9]

A. <u>One of Ordinary Skill in the Art would not have Modified Bennett with Jolitz as Proposed by the Final Rejection</u>

"Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination. Under section 103, teachings of references can be combined only if there is some suggestion or incentive to do so. Although couched in terms of combining teachings found in the prior art, the same inquiry must be carried out in the context of a purported obvious 'modification' of the prior art. The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification." *In re Fritch*, 972 F.2d 1260, 1266 (Fed. Cir. 1992). See also *In re Lee*, 277 F.3d 1338, 1342-1343 (Fed. Cir. 2002); *McGinley v. Franklin Sports*, Inc., 262 F.3d 1339, 1351-52, (Fed. Cir. 2001).

No incentive is evident to modify Bennett with Jolitz as proposed by the Final Rejection. Nor does the Final Rejection provide an incentive to modify Bennett "to

implement a bypass route for Bennett's network processor for non-TCP/IP packets (or when the network processor is unavailable)." The Final Rejection alleges that "because Bennett's network processor is dedicated for portions of TCP/IP processing and the bypass route would facilitate the CPU's take over of the entire TCP/IP processing." What this is supposed to mean is at best unclear. One objective of Bennett appears to be to perform some TCP processing on "network card 2000" rather than the CPU.[10] In contrast, the Final Rejection alleges that one of ordinary skill in the art would modify Bennett to bypass the "network card 2000" and perform more ("take over the entire") TCP/IP processing on the CPU. Should those of skill in the art adopt the approach proposed by the Examiner, technology would move backward instead of forward.

There is, of course, no teaching in Bennett or Jolitz that it would be beneficial to modify Bennett to "facilitate the CPU's take over of the entire TCP/IP processing." Because this allegation appears to come from the Examiner's personal knowledge, applicants respectfully request that the Examiner provide a supporting affidavit as required by 37 C.F.R. §1.104(d)(2). Applicants respectfully assert that without such an affidavit, the Examiner's bare allegation of obviousness does not amount to evidence or even reasonable argument. Instead, obviousness is not found in the absence of "any specific hint or suggestion in a particular reference." *In re Lee*, 277 F.3d at 1344. For at least this reason, the Examiner has not presented a *prima facie* case of obviousness of claim 28 or claim 41.

B. Nonobvious Differences Exist Between the References as Proposedly Combined and the Claims at Issue

As noted above, Bennett does not anticipate claim 17, which claim 28 depends from, because claim 17 differs from Bennett in several material ways. Modifying Bennett with Jolitz as proposed in the Final Rejection does not solve these deficiencies. For example, neither Bennett nor Jolitz even mentions a TCP connection, in contrast to claim 17. Indeed, the failure to even consider, let alone teach, how to handle this body of complicated, dynamic and interrelated TCP state variables shows that Jolitz, like Bennett,

[9] Emphasis in original.
[10] See, e.g., column 16, lines 4-18.

is nonenabled. Therefore Jolitz, like Bennett, demonstrates a long-standing need for the invention defined by the present claims, and a failure of others in their approach to solving that need.

Moreover, neither Bennett nor Jolitz teaches "a central processing unit (CPU) running protocol processing instructions in the local host to create a TCP connection between the local host and the remote host," in contrast to claim 17. In addition, neither Bennett nor Jolitz teaches "said CPU providing to said CPD a media-access control (MAC) address, an IP address and a TCP port that correspond to said connection," in contrast to claim 17. Furthermore, neither Bennett nor Jolitz teaches "wherein said CPD and said CPU are configured such that a packet transferred between the network and the local host is processed by said CPD and not by said CPU when said CPD controls said connection and said packet corresponds to said connection," in contrast to claim 17. For at least the above reasons, the Final Rejection has not presented a *prima facie* case of obviousness of claim 28 or claim 41.

Moreover, as admitted in the Final Rejection regarding claim 28, Bennett does not teach using an ownership bit disposed in the local host to designate whether said CPU or said CPD controls said connection. Similarly, Jolitz does not teach, as recited in claim 28, an ownership bit disposed in the local host, said ownership bit designating whether said CPU or said CPD controls said connection. Applicants note that the Office Action does not assert that Jolitz teaches such an ownership bit. Obviousness is not found in the absence of "any specific hint or suggestion in a particular reference." *In re Lee*, 277 F.3d at 1344.

In response to applicants' argument that the Office Action did not assert that the modification of Bennett with Jolitz as proposed in the Office Action would somehow result in an ownership bit, the Final Rejection makes the bald assertion that "<u>a bypass route is typically implemented by controlling a switching circuit with a control signal (i.e., an ownership bit).</u>" Applicants respectfully assert that the cited references do not support this allegation. Because this allegation appears to come from the personal knowledge of the Examiner, applicants respectfully request that the Examiner provide an affidavit supporting the allegation, as required by 37 C.F.R. §1.104(d)(2).

Regarding claim 41, the Office Action states:

> As to claim 41, since the features of these claims can also be found in claims 17, 28 and 30, it is rejected for the same reasons set forth in the rejection of claims 17, 28 and 30 above.

In response to the Examiner's assertion: "As to claim 41, since the features of these claims can also be found in claims 17, 28 and 30, it is rejected for the same reasons set forth in the rejection of claims 17, 28 and 30 above," applicants respectfully assert that claim 41 is nonobvious for all of the reasons mentioned above with regard to claim 28. In addition, because claim 30 contains different limitations than claim 17, and the Office Action does not provide any reason why those additional limitations would be obvious, claim 41 is nonobvious for that reason also. To wit, Bennett does not anticipate claim 30, which claim 41 depends from, because claim 30 differs from Bennett in several material ways. Modifying Bennett with Jolitz as proposed in the Final Rejection does not solve these deficiencies. For example, neither Bennett nor Jolitz even mentions a TCP connection, in contrast to claim 30. As noted above, the failure to even consider, let alone teach, how to handle this body of complicated, dynamic and interrelated TCP state variables shows that Jolitz, like Bennett, is nonenabled.

Moreover, neither Bennett nor Jolitz teaches "a central processing unit (CPU) disposed in the local host and running protocol processing instructions to create a Transmission Control Protocol (TCP) connection between the local host and the remote host," in contrast to claim 30. In addition, neither Bennett nor Jolitz teaches "said CPU providing to said CPD a media-access control (MAC) address, an Internet Protocol (IP) address and a Transmission Control Protocol (TCP) port that correspond to said connection," in contrast to claim 30. Furthermore, neither Bennett nor Jolitz teaches "said CPD receiving control of said connection from said CPU," in contrast to claim 30. Moreover, neither Bennett nor Jolitz teaches "said CPU processing a first network packet corresponding to said connection; and... said CPD classifying a second network packet as corresponding to said connection and processing said second network packet without any protocol processing of said second network packet by said CPU," in contrast to claim 30.

Additionally, as admitted in the Final Rejection regarding claim 41, Bennett does not teach using an ownership bit disposed in the local host to designate whether said CPU

or said CPD controls said connection. Similarly, Jolitz does not teach, as recited in claim 41, an ownership bit disposed in the local host, said ownership bit designating whether said CPU or said CPD controls said connection. Applicants note that the Office Action does not assert that Jolitz teaches such an ownership bit. Obviousness is not found in the absence of "any specific hint or suggestion in a particular reference." *In re Lee*, 277 F.3d at 1344.

As noted above, the Final Rejection makes the bald assertion that "a bypass route is typically implemented by controlling a switching circuit with a control signal (i.e., an ownership bit)." Applicants respectfully assert that the cited references do not support this allegation. Because this allegation appears to come from the personal knowledge of the Examiner, applicants respectfully request that the Examiner provide an affidavit supporting the allegation, as required by 37 C.F.R. §1.104(d)(2).

For at least these reasons, the Final Rejection has not presented a *prima facie* case of obviousness of claim 41.

Instead of providing a *prima facie* case of obviousness of claim 28 or claim 41, the Final Rejection responds to applicants' showing that the Office Action is deficient by stating, in paragraph 23:

> As to claims 28 and 41, the "ownership bit" is an obvious implementation of Jolitz's bypassing mechanism be providing a switching element with a control signal (i.e., ownership bit).

Applicants respectfully assert, however, that this argument (as can best be understood) is tantamount to the Examiner stating "it is obvious because it is obvious." Much as above, because this allegation appears to come from the personal knowledge of the Examiner, applicants respectfully request that the Examiner provide an affidavit supporting the allegation, as required by 37 C.F.R. §1.104(d)(2).

In short, the Final Rejection has not presented a *prima facie* case of obviousness for any claim.

III. Conclusion

Applicants have responded to each of the items of the Final Rejection, showing that the Final Rejection has not presented a *prima facie* case of anticipation or

obviousness for any of the claims. As such, applicants respectfully assert that the Final Rejection should be withdrawn, and a Notice of Allowance provided.

Respectfully submitted,

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CERTIFICATE OF FACSIMILE TRANSMISSION

I hereby certify that this correspondence is being transmitted via facsimile to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313, telephone number (571) 273-8300, on February 9, 2006.

Date: 2-9-06

Mark Lauer

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TCP/IP Illustrated, Volume 1

The Protocols

W. Richard Stevens

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Each TCP segment contains the source and destination *port number* to identify the sending and receiving application. These two values, along with the source and destination IP addresses in the IP header, uniquely identify each *connection*.

The combination of an IP address and a port number is sometimes called a *socket*. This term appeared in the original TCP specification (RFC 793), and later it also became used as the name of the Berkeley-derived programming interface (Section 1.15). It is the *socket pair* (the 4-tuple consisting of the client IP address, client port number, server IP address, and server port number) that specifies the two end points that uniquely identifies each TCP connection in an internet.

The *sequence number* identifies the byte in the stream of data from the sending TCP to the receiving TCP that the first byte of data in this segment represents. If we consider the stream of bytes flowing in one direction between two applications, TCP numbers each byte with a sequence number. This sequence number is a 32-bit unsigned number that wraps back around to 0 after reaching $2^{32} - 1$.

When a new connection is being established, the SYN flag is turned on. The *sequence number field* contains the *initial sequence number* (ISN) chosen by this host for this connection. The sequence number of the first byte of data sent by this host will be the ISN plus one because the SYN flag consumes a sequence number. (We describe additional details on exactly how a connection is established and terminated in the next chapter where we'll see that the FIN flag consumes a sequence number also.)

Since every byte that is exchanged is numbered, the *acknowledgment number* contains the next sequence number that the sender of the acknowledgment expects to receive. This is therefore the sequence number plus 1 of the last successfully received byte of data. This field is valid only if the ACK flag (described below) is on.

Sending an ACK costs nothing because the 32-bit acknowledgment number field is always part of the header, as is the ACK flag. Therefore we'll see that once a connection is established, this field is always set and the ACK flag is always on.

TCP provides a *full-duplex* service to the application layer. This means that data can be flowing in each direction, independent of the other direction. Therefore, each end of a connection must maintain a sequence number of the data flowing in each direction.

TCP can be described as a sliding-window protocol without selective or negative acknowledgments. (The sliding window protocol used for data transmission is described in Section 20.3.) We say that TCP lacks selective acknowledgments because the acknowledgment number in the TCP header means that the sender has successfully received up through but not including that byte. There is currently no way to acknowledge selected pieces of the data stream. For example, if bytes 1–1024 are received OK, and the next segment contains bytes 2049–3072, the receiver cannot acknowledge this new segment. All it can send is an ACK with 1025 as the acknowledgment number. There is no means for negatively acknowledging a segment. For example, if the segment with bytes 1025–2048 did arrive, but had a checksum error, all the receiving TCP can send is an ACK with 1025 as the acknowledgment number. In Section 21.7 we'll see how duplicate acknowledgments can help determine that packets have been lost.

The *header length* gives the length of the header in 32-bit words. This is required because the length of the options field is variable. With a 4-bit field, TCP is limited to a 60-byte header. Without options, however, the normal size is 20 bytes.